

# EUROPEAN PATENT OFFICE

7659-5

## Patent Abstracts of Japan

PUBLICATION NUMBER : 11054411  
PUBLICATION DATE : 26-02-99

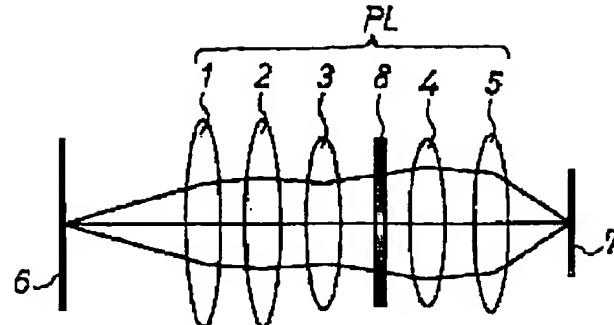
APPLICATION DATE : 29-07-97  
APPLICATION NUMBER : 09218179

APPLICANT : CANON INC;

INVENTOR : UNNO YASUYUKI;

INT.CL. : H01L 21/027 G02B 5/30 G02B 13/24  
G03F 7/20

TITLE : PROJECTION OPTICAL SYSTEM AND  
PROJECTION ALIGNER USING THE  
SAME



ABSTRACT : PROBLEM TO BE SOLVED: To excellently correct the birefringence of an optical element incorporated in a projection optical system and, to transfer patterns with high accuracy, by incorporating a means which corrects the birefringence of the optical element in the optical system.

SOLUTION: A birefringence correcting member 8 is incorporated in an optical system so as to cancel phase variation. Since a material equivalent to the optical glass used for lens elements 1-5 must be used for the member 8, and birefringence having a prescribed distribution must be caused through the optical glass, such a phenomenon as the structural birefringence is utilized. Namely, the phase difference between a polarized component in the direction parallel to the grooves of a diffraction grating and the polarized component in the direction perpendicular to the groove can be set at an arbitrary value, by using a fine diffraction grating indicating the structural birefringence and appropriately selecting the duty ratio of the grating and the depths of the grooves.

COPYRIGHT: (C)1999,JPO